

2014 Maryland FMP Report (July 2015)

Section 9. Maryland Catfish Species

Introduction

No discussion of catfish management in Maryland is complete without addressing invasive catfish species, notably, blue catfish (*Ictalurus furcatus*) and flathead catfish (*Pylodictis olivaris*). The populations of both invasive species continue to expand into areas of the Chesapeake Bay and its tributaries where their presence was previously undocumented. They are also contributing more to the overall catfish harvest. The establishment of these invasive species is one of the most difficult problems in fisheries management.

There are five catfish species harvested from the Chesapeake Bay. White catfish (*Ameiurus catus*) and brown bullheads (*A. nebulosus*) are native to the area. Channel catfish (*Ictalurus punctatus*) were introduced into the Potomac River around the end of the 19th century. The channel catfish spread throughout the Bay region, reaching Maryland's portion of the Chesapeake Bay in the late 1950's. They are now ubiquitous in the region and are considered naturalized. The non-native blue (*Ictalurus furcatus*) and flathead (*Pylodictis olivaris*) catfish populations have spread into nearly every major tributary of the Chesapeake Bay (Figure 1). Blue catfish were introduced to the Potomac River in the 1970s and have been found in high numbers from the 1990's to present. Flathead catfish were introduced to the James River in Virginia between 1965 and 1977. Additional introductions are believed to have occurred in the upper Chesapeake Bay within the last 10 years and flathead catfish are now commonly found there. Both non-native catfish species have increased in abundance and expanded their range beyond their usual salinity tolerance. Blue and flathead catfish are top apex predators in the ecosystem which raises concerns about their effects on native fish communities.

The Chesapeake Bay Program's Sustainable Fisheries Goal Implementation Team (SFGIT) has recognized invasive catfish as a problem. Blue and flathead catfishes are listed in Maryland regulations as "Nuisance and Prohibited Species" and are on the "No transport" list which prohibits anglers from moving them to other waters of the state. However, both non-native catfish species have been established in areas outside of what would be considered "normal" movement. It is likely that non-native species have been spread by angler transport. There are conflicting concerns between supporting recreational/ commercial fishing opportunities for invasive catfish and curtailing an "invasive" species.

A Fishery Management Plan has not been written for catfish in Chesapeake Bay but a technical report was written in 1998. The technical report summarized catfish

knowledge and recommended a survey of catfish populations to determine stock status in the Chesapeake Bay.

The Sustainable Fisheries Goal Implementation Team (GIT) of the Chesapeake Bay Program developed a policy on invasive catfish species. The policy agrees to develop and implement management strategies to reduce invasive catfish populations and mitigate their spread. An Invasive Catfish Task Force (ICTF) was established in 2012 to identify management options for addressing invasive catfish issues. The ICTF developed a draft report in 2014. The Invasive Species Action Plan recommends: slowing and reducing the spread of invasive catfishes populations in currently uninhabited waters; minimizing the ecological impacts of invasive catfishes on native species; promoting a commercial fishery to significantly reduce the abundance of invasive catfishes populations thus providing economic benefits to the region; and increasing outreach and education to improve public awareness that blue and flathead catfishes pose a risk to native species. The report was comprehensively reviewed by the Chesapeake Bay Program's Scientific and Technical Advisory Committee (STAC) in November, 2014.¹ While the review board expressed concerns that the recommendations contained in the ICTF report could be difficult to implement, they were supportive of further research efforts and suggested the Aquatic Nuisance Species Task Force (ANSTF) as a resource for the development of a comprehensive plan.

The ASMFC adopted a Resolution on Non-Native Invasive Catfish (2011) to recognize that blue and flathead catfish are invasive species. The policy identifies the need for more research and supports the development of management efforts to reduce/minimize the impacts of invasive catfish species. It also does not support the introduction or transport of non-native invasive species.

Stock Status

A population assessment of channel catfish was completed in 2010² and updated in 2013. A surplus production model for the Head of Bay (HOB), Choptank River, and the Potomac River was used to assess the stock. Fishery dependent and independent relative abundance indices were also calculated. In addition to indices from commercial landings, results from the spring drift gill net surveys in the HOB, Choptank and Potomac Rivers and the fyke net survey index for the Choptank River were used in the surplus production models. The Estuarine Juvenile Finfish Survey (EJFS) data were used to determine relative juvenile catfish abundance and used as qualitative supporting data. The HOB surplus production model showed a population biomass decline during the 1990's after a period of population growth in the 1980's. Relative stock density data from fyke nets sampled in the Choptank River indicate that channel and white catfish relative abundance was slightly above the average for the time series up to 2013 and was slightly below average in 2014 (Figures 2 and 3)³. Channel catfish juvenile recruitment during 2012 was not detectable but was at or above 2011 levels during 2013 and 2014 (Figure 4).

Management

There are no minimum size limits, no creel limits or closed seasons for any commercial or recreational catfish fisheries in tidal waters. Area and gear restrictions apply to commercial fishermen but are not catfish-specific. In non-tidal waters, there is a 5 fish/person/day creel limit with a 10 fish possession limit and no minimum size limit for channel catfish.

Fishery Statistics

The catfish commercial fishery is important in the Chesapeake Bay region (Figure 5). When harvest peaked in 1996, catfish were the second highest landed species by weight. In 2008, catfish landings were third highest by weight. Since 2009, the catfish commercial landings are reported by species. Commercial catfish harvest for 2014, excluding non-natives, was over 2.2 million lbs. The 2014 commercial landings for blue and flathead catfish decreased from 2013 landings by 78,755 and 2,977 pounds, respectively. In the last few years, flathead and blue catfish have entered the commercial fishery and an active market exists for these invasive species. Catfish are caught in commercial fish pots, fyke nets, and pound nets. They are sold in both “dead” and “live” markets.

The recreational fishery for catfish is also important, but there are no recent surveys of recreational catfish catch in Maryland. The Marine Recreational Information Program (MRIP) does not collect data on catfish. In some western shore tributaries of Chesapeake Bay, guided trophy fisheries exist and utilize catch-and-release activity especially for the larger, invasive blue catfish. Recreational catfish size records are frequently broken. The recreational catch of invasive catfish species is popular especially for large, trophy fish. The DNR requests that anglers remove and kill any blue and flathead catfish they catch.

Issues of Concern

Introduced non-native catfish are invasive species. Both blue and flathead catfish compete with native species for forage. Fishermen most likely have moved these invasive species to different areas within the Bay in misguided attempts to “improve” fishing conditions. Declines of channel catfish biomass have corresponded to the appearance of the blue catfish in Potomac River surveys.¹ Blue catfish inter-specific competition and predation may hinder channel catfish population recovery. Native white catfish have declined in many areas and circumstantial evidence suggests their decline may be correlated to the expansion of non-native, invasive catfish species. This may also have consequences to the recoveries of ospreys and eagles that rely upon native and naturalized fish species for high quality forage.⁴

Catfish do not undertake long migrations and can occur throughout the year in degraded habitats. They accumulate toxins, especially PCBs and pesticides, and MDE has posted consumption advisories for many areas such as Patapsco Harbor, Baltimore Harbor, Middle River and portions of the Elk River, Back River, Anacostia River and Potomac River. In addition to the human health advisories, catfish found in some habitats, such as the Anacostia River, exhibit high rates of skin and liver tumors, likely a result of exposure to polynuclear aromatic hydrocarbons (PAHs) in contaminated sediments⁵.

The Chesapeake Bay jurisdictions have engaged in a public outreach effort to inform people about invasive catfish species. Maryland developed an awareness campaign to help people identify and catch invasive catfish, understand the importance of prohibiting their transport, and encouraging anglers to keep and not release them. More than 150 educational signs have been posted at water access areas and there are increasing efforts to bring invasive catfish to market.

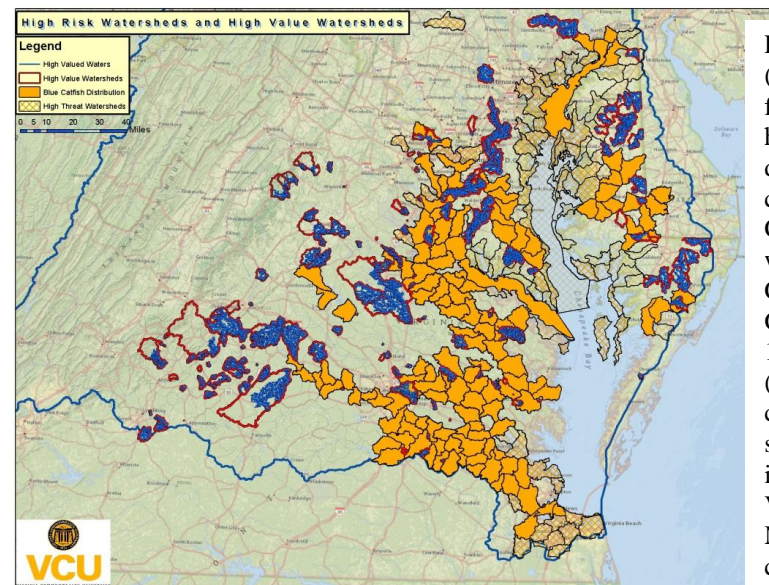


Figure 1. Current (solid polygons) and forecasted (cross-hatched polygons) distribution of blue catfish in Chesapeake Bay waters below Conowingo Dam. Geospatial units are 12-digit watersheds (HUCs). Data are compiled from several sources, including VCU, VIMS, VDGIF, and MdDNR; data were current as of 1 April, 2013.

References:

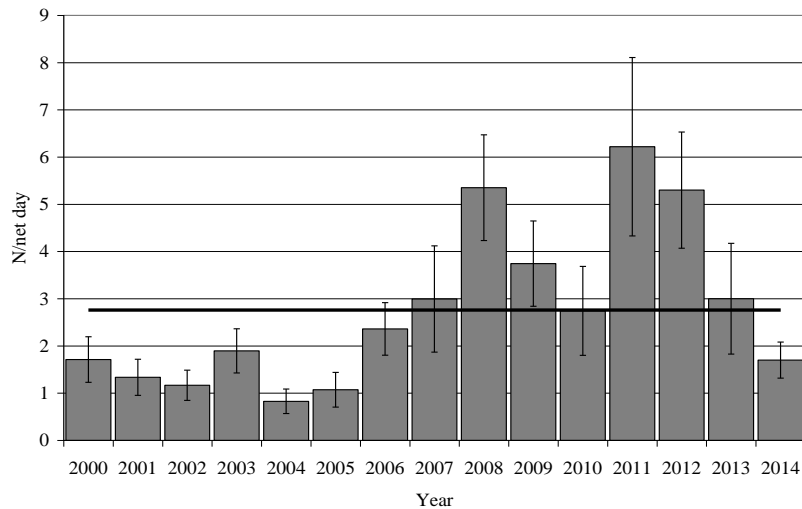
¹Bilkovic, D.M. and T.F. Idhe. 2014. Review of the final report of the Sustainable Fisheries Goal Implementation Team Invasive Catfish Task Force. Chesapeake Bay Program Scientific and Technical Advisory Committee, No. 14-007, Edgewater, MD 46 pp.

²Piavis, P. and E. Webb III. 2010. Population assessment of channel catfish in Maryland with special emphasis on Head-of-Bay stocks. In Chesapeake Bay finfish and habitat investigations. Maryland Department of Natural Resources. Report F-61-R-5. Annapolis, Maryland.

³Piavis, P. and E. Webb III. 2014. Population vital rates of resident finfish in selected tidal areas of Maryland's Chesapeake Bay. Project No.1, Job No.1 *In* Chesapeake finfish and habitat investigations. Maryland Department of Natural Resources. Report F-61-R. Annapolis, Maryland.

⁴Viverette, C.A., G.C. Garman, S.P. McIninch, A. C. Markham, B.D. Macko. 2007. Finfish-waterbird trophic interactions in tidal freshwater tributaries of the Chesapeake Bay. *Waterbirds* 30 (Special Publications 1):50-62.

Figure 2. Channel catfish relative abundance (N/net day) from the Choptank River fyke net survey, 2000 – 2014. Horizontal line indicates time series average relative abundance.²



⁵Pinkney, A.E., J.C. Harshbarger, E.B. May, and W.L. Reichert. 2002. Tumor prevalence and biomarkers of exposure and response in brown bullheads (*Ameiurus nebulosus*) from the Anacostia River, Washington, D.C. and Tuckahoe River, Maryland. CBFO-C02-07.

⁶Durell, E.Q., and Weedon, C. 2013. Striped Bass Seine Survey Juvenile Index Web Page. <http://www.dnr.state.md.us/fisheries/juvindex/index.html>. Maryland Department of Natural Resources, Fisheries Service.

Figure 3. White catfish relative abundance (N/net day) from the Choptank River fyke net survey, 2000 – 2014. Horizontal line indicates time series average relative abundance.

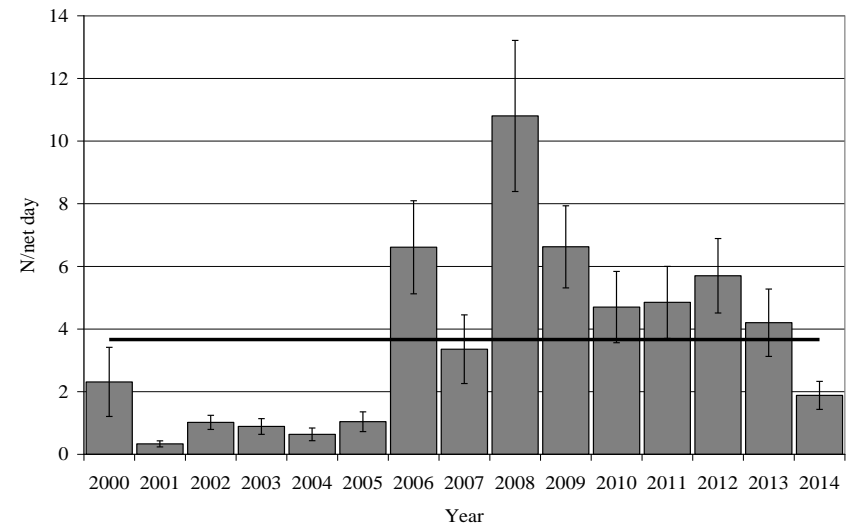


Figure 4. Maryland young-of-year (YOY) geometric mean catch per haul of channel catfish, 1975-2014.⁶

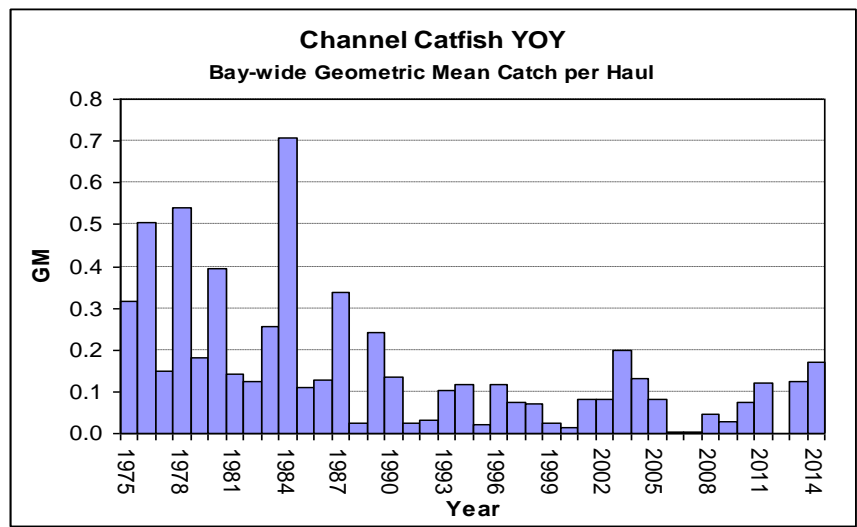


Figure 5. Maryland commercial catfish landings (MDDNR data)

